

# WATER TREATMENT SOLUTIONS

be  
think  
innovate

**GRUNDFOS** 



**GRUNDFOS**  
CENTRIFUGALPUMPER

# GRUNDFOS

Founded in 1945 in Bjerringbro, Denmark, Grundfos is a global pump and pumping systems provider with an annual production of more than 16 million units. To support plans for strategic growth in North America, Grundfos acquired Paco, Peerless and Yeomans Chicago Corporation, which have added valuable resources and competencies to the region.

The acquisitions enable Grundfos to offer a wide range of solutions for both water and wastewater applications. From multistage industrial and submersible pumps, to disinfection systems and chemical feed systems, the Grundfos portfolio offers solutions to your individual needs.



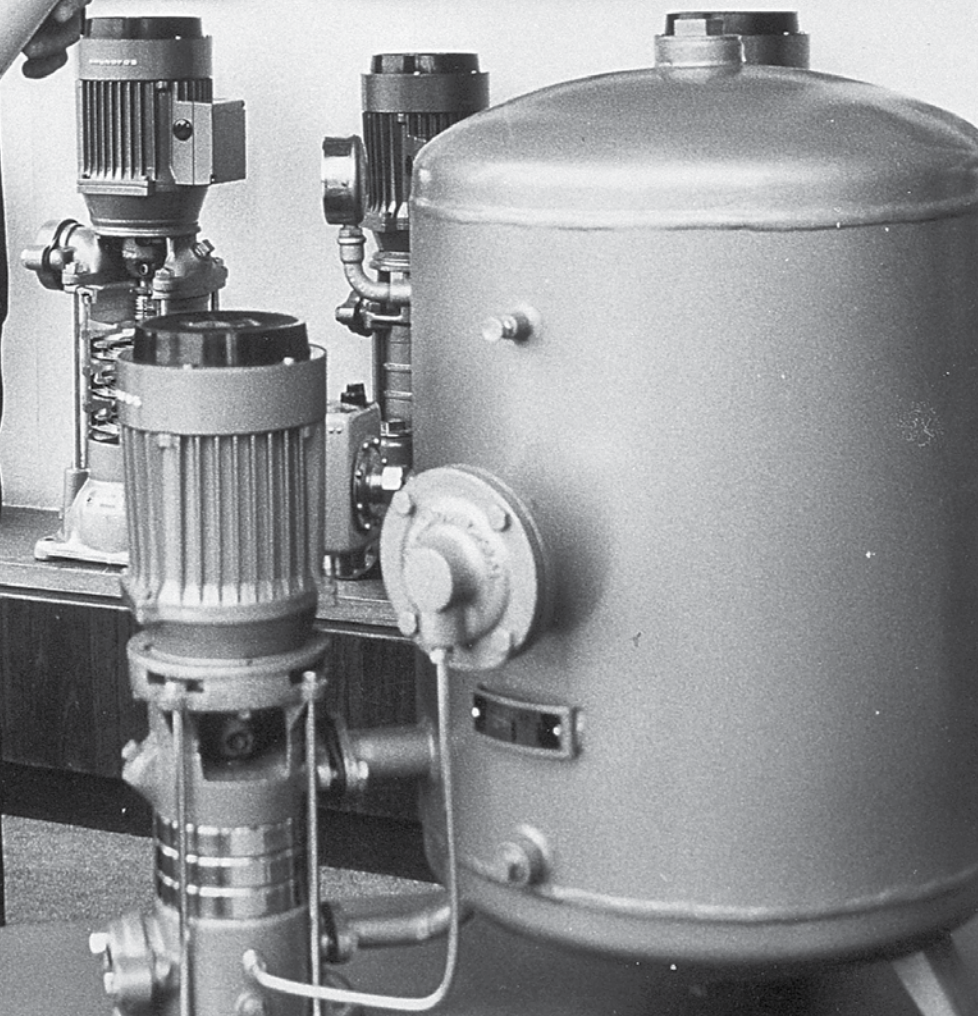
TYPE CPS 2  
0.5 - 2.5 m³ pr. time

TYPE CP 3  
pr. time

TYPE CP 8  
pr. time



LOSER MED  
AERSEL OG  
PÅSÆT  
TYPE CP 8



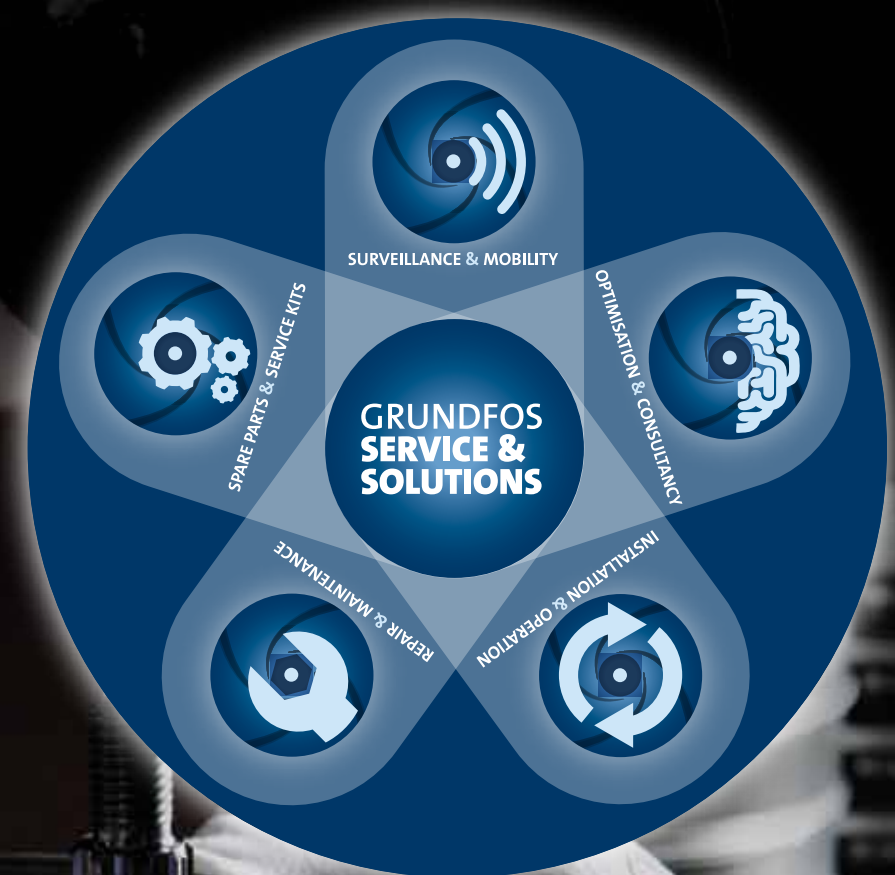
## Water industry experience and expertise across the board

Along with our full product range, Grundfos has decades of pumping knowledge that drives advanced pumping solutions. Our dedicated water treatment team has years of water treatment application experience, to ensure the perfect match of component and sub-system to application and treatment solutions. With a global network of professionals we can meet demands in every geography and for different water conditions.



# SERVICE

Grundfos is a world-class provider of Service, from specification and designing, to installation, operation including maintenance, repair, optimization and contingent replacement, building enduring customer relations and satisfaction.





# Grundfos offers total pumping solutions; on any scale.

## The right solution for every step of the cycle

With products as diverse as submersible pumps for raw water intake, complete disinfection systems for water treatment and boosters for filtration systems, Grundfos can provide solutions.

## Innovation

To Grundfos, the objective is not only the development of advanced technologies, but also what the technologies can do to provide customers and users with the best possible operating economy, quality, reliability and functionality.

## Anticipating the future

Grundfos invests 5% of its annual revenue into research and development, with nearly 18,000 employees in 45 countries, dedicated to addressing the challenges of tomorrow, today.

## Custom Designs

Engineered designs for unusual applications have always been a specialty for Grundfos. From vertical turbines to chemical feed systems, no application is beyond our technical expertise.

## A dedicated mission

Grundfos is committed to making a positive contribution to the world. Innovation goes hand in hand with responsibility - and we take pride in constantly pushing the boundaries to offer increasingly energy-efficient and sustainable solutions.



# Grundfos Global Reach

## Connecting business and operations in a smarter way

Global Customer Reach adds value to our customers through:

- Consistently high standards
- On-going improvements
- Strategic and tactical cooperation

## People and organization

Global customer core team:

- **Sales Executive**  
develops strategies and relations

- **Global Account Manager**

single point of global contact

- **Local Sales**

points of contact for local operations

- **Relevant Experts**

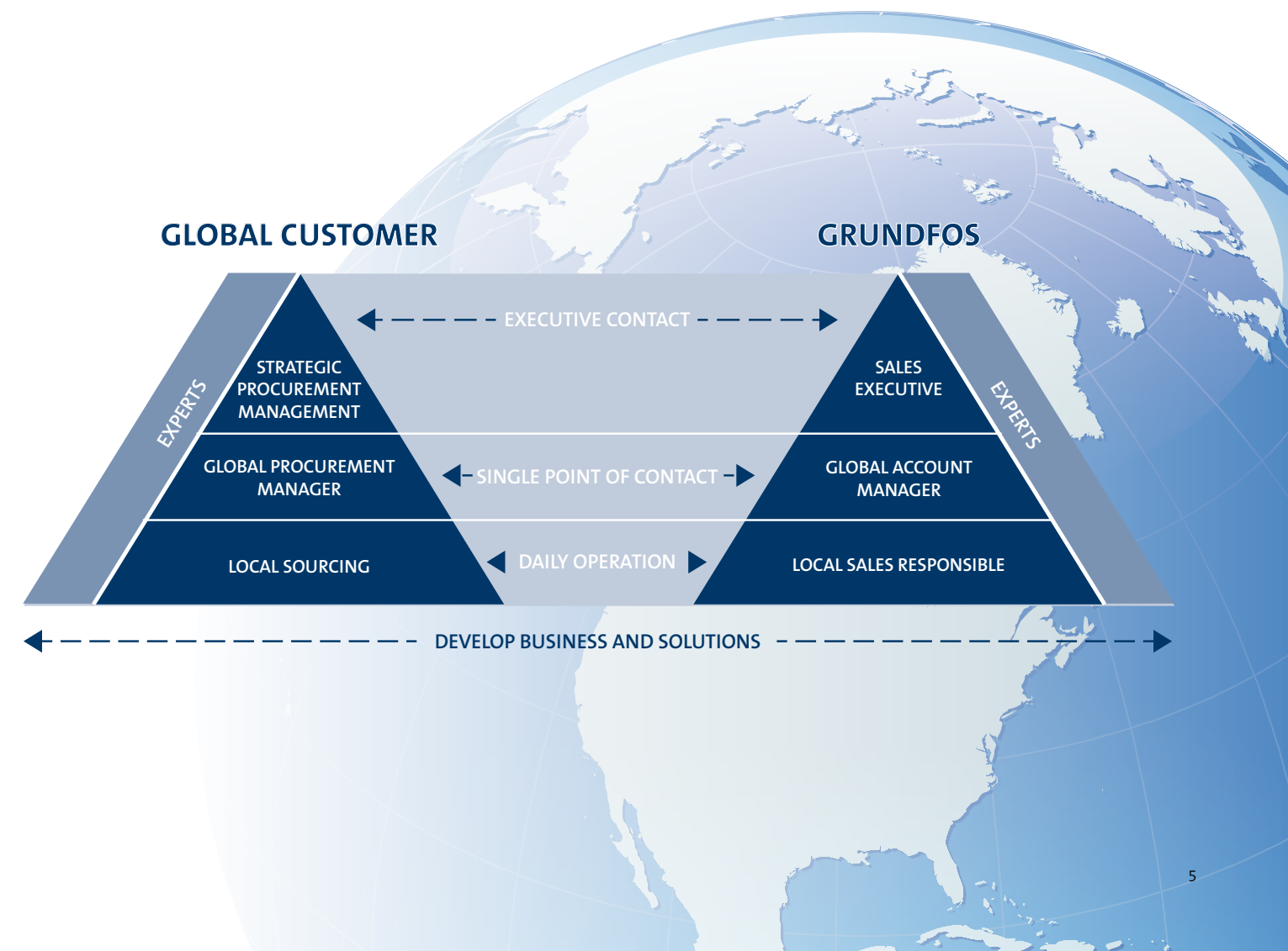
pumps, applications, production and logistics

## Operations

- **Global Customer Plan**

to guide all initiatives and establish consistency

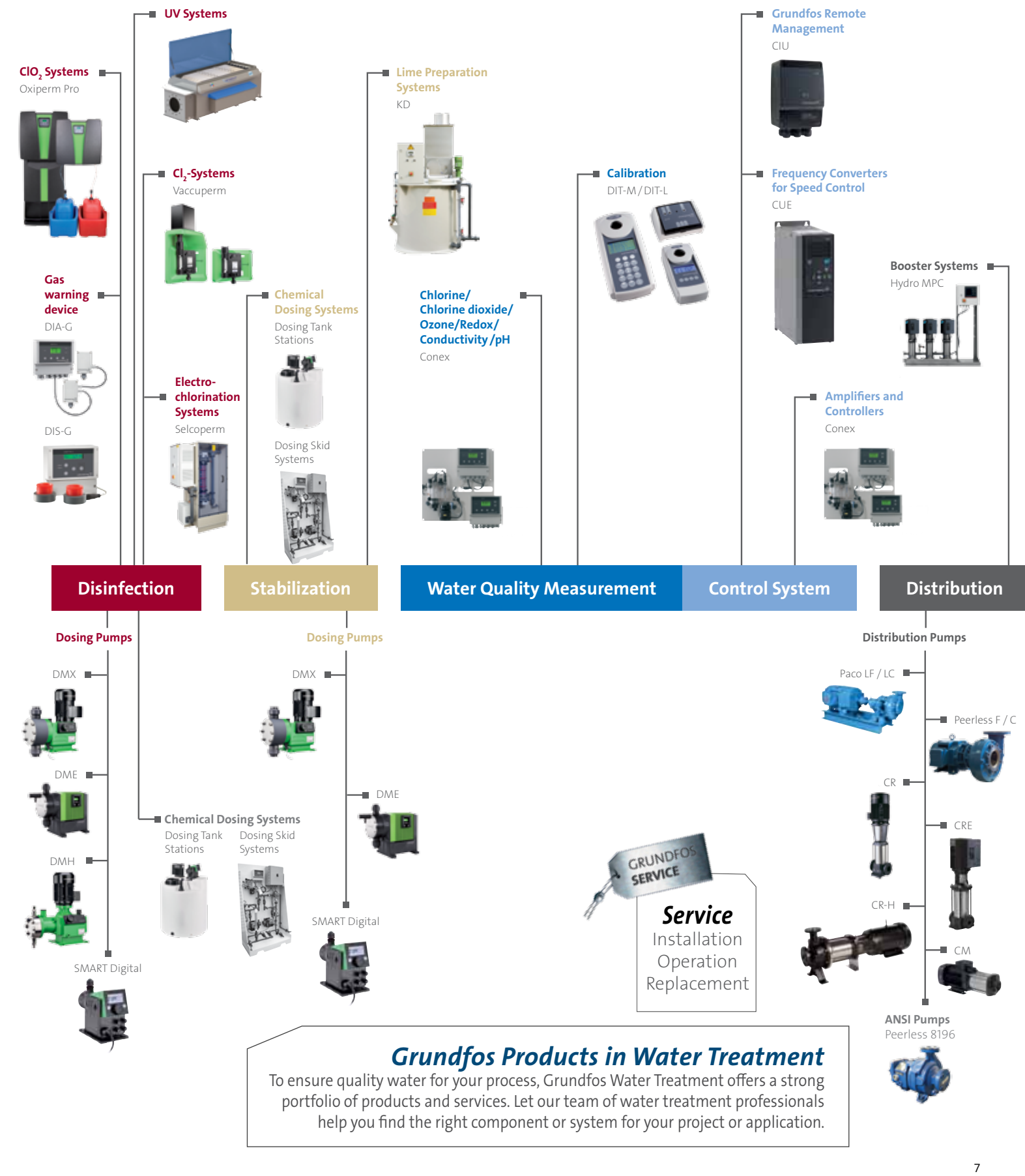
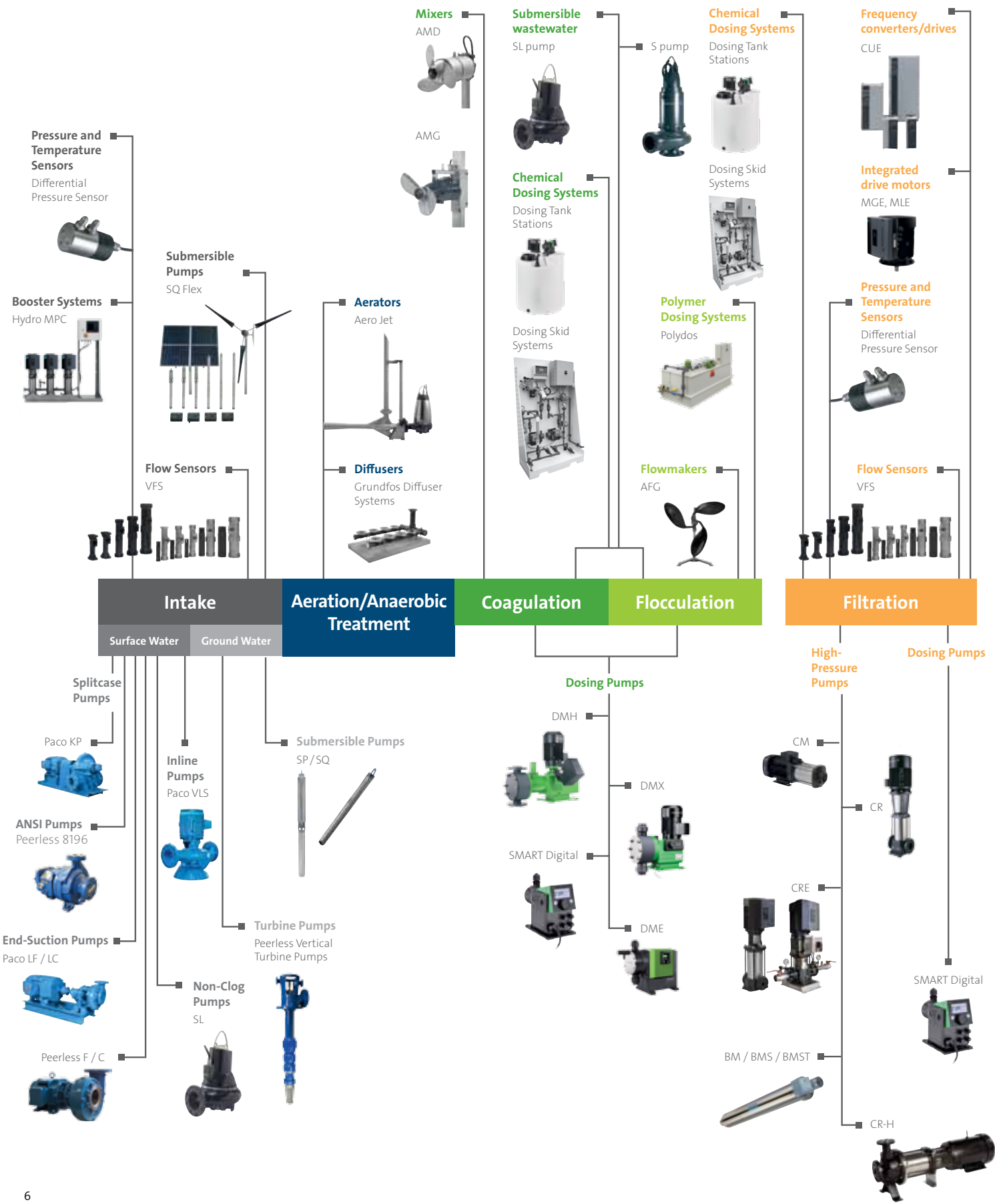
- **Comprehensive and uniform business support**





# GRUNDFOS PRODUCTS

# IN WATER TREATMENT



**Grundfos Products in Water Treatment**  
To ensure quality water for your process, Grundfos Water Treatment offers a strong portfolio of products and services. Let our team of water treatment professionals help you find the right component or system for your project or application.



# MEMBRANE FILTRATION

**D**emanding applications require reliable solutions.

When one of our partners approached us with a new pressure system design they were going to build in-house as part of a streamlined system for dialysis centers, we took the challenge personally.

Our membrane manufacturing customers turn to Grundfos to provide reliable, easy-to-use and efficient pumps as a key component for their water treatment systems. Our CR vertical multi-stage pump has set a standard for membrane treatment.

Most applications require reliability, but few are as demanding as water treatment for dialysis patients.

Our partner in dialysis membrane systems has long used our integrated drive pumps, the CRE-plus, as a core to their treatment solutions. But new requirements moved them to design a more compact pressure system they were going to build. Our key account and engineering teams approached our customer with a solution to completely manage this sub-system.

Grundfos matched our partner's design and offered a cost-effective, engineering and manufacturing solution. With a reliable and advanced Grundfos sub-system as part of their treatment system, our partner was able to continue to focus on what matters most – reliable, clean water treatment for a demanding application.

“Our partner was able to continue to focus on what matters most.”





Image, courtesy of Mar Cor Purification Inc., a Cantel Medical Company.

*“It is life, I think, to watch the water. A man can learn so many things.”*  
 – Nicholas Sparks



## MEMBRANE FILTRATION PRODUCT HIGHLIGHT

**[A] CR/CRE Vertical Multistage pumps**

A versatile, modular and reliable standard for membrane boosting, including options for an integrated drive.

**[B] BM/BMS Booster Modules**  
 Compact boosting solutions for membrane systems including high flow and high pressure applications, and pressure exchange.

**[C] CUE Variable Frequency Drives**  
 Wide-selection of frequency drives designed specifically for Grundfos pumps for easy set-up and energy optimization.

**[D] VFI Flow Sensors**

Industrial, vortex flow sensors for accurate measurements.

**[E] SMART Digital Chemical Feed Pumps**

With 3000:1 turn down the SMART pumps offer precise dosing for anti-scalant, CIP and disinfection chemical feed.

**[F] CONEX DIA Analyzer and Controller**

Measure and control water disinfectants for membrane pre- and post-treatment.

**[G] Application Solutions**

CAPs selection tools and programs that communicate with your pump. We have an APP for that.

**[H] DTS Dosing Tank System**

The Grundfos Dosing Tank Systems offer a compact, full-supply solution for CIP chemical storage and feed.





# DISINFECTION

# CHEMICAL FEED



## OXIPERM PRO

*Legionella pneumophila* is a bacterium found often in domestic and utility water systems that can cause Legionaire's disease or Pontiac Fever. Chlorine dioxide, a strong oxidant generated on-site, can be an effective tool to manage outbreaks.

In order to implement a preventative program against Legionella outbreaks in their domestic water supply, one major central-U.S. hospital turned to a local water treatment company for help. As part of their program they installed ten chlorine dioxide generation systems from a Grundfos competitor.

After suffering frustrations with systems breaking down and difficult service, the hospital and treatment company turned to Grundfos for the Oxiperm Pro Chlorine Dioxide generators. With a simplified process and robust design, the Oxiperm Pro has provided reliable and consistent treatment at the hospital, while also saving chemicals.

### Oxiperm Pro OCD-162

The chlorine dioxide production system is the perfect solution for fighting Legionella and other germs in drinking water. The systems produce chlorine dioxide using diluted solutions of precursor chemicals. It is available in 4 sizes.

### PRODUCT HIGHLIGHT

- Simplified batch production process
- Integrated analyzer and controller
- SMART Digital pumps for precise dosing
- Safety systems
- Compact, robust design



## SMART Digital Dosing

Liquid bleach, sodium hypochlorite, remains number one water disinfectant. And the issues associated with feeding it remain a frequent frustration for operators: loss of prime or gas bubbles.

The Grundfos SMART Digital dosing pumps offer a standard solution for reliable, accurate liquid bleach feed.

**Stepper Motor:** The precise stepper motor and diaphragm design ensure liquid and bubbles are evacuated.

**Auto-Degassing:** Gas bubbles are automatically detected and the dosing pump adjusts flow to degas bubbles.

**Auto-Deaeration:** In stand-by mode the pump works to remove trapped bubbles during down-time.

**Improved Design:** Improved valves and dosing head design to handle trapped gasses.

### SMART Digital DDA, DDC, DDE

Full dosing line that offers cost-effective, precise feed solutions with SIMPLICITY, MODULARITY and FLOW INTELLIGENCE.





# CHEMICAL FEED

**A** multi-national water treatment engineering company had secured a contract to build a decentralized wastewater plant in Southern California. The project scope included a variety of the company's core treatment technologies they would integrate, but also required chemical feed systems.

Chemical feed pumps rarely are installed without necessary accessories to ensure precise, reliable treatment: calibration columns, pressure relief valves, back-pressure valves, piping, etc. Pre-engineered systems that offer a pipe-in, power-up solution makes engineering, selection and installation easier.

Our water treatment partner approached us to provide and manage multiple chemical feed systems for their project. From concept, through engineering, testing, delivery and commissioning, Grundfos managed the project. By taking responsibility, Grundfos was able to leverage our pump expertise and technology and make the most of a solution. All while our customer focused on what they do best, deliver clean water.

“From concept...to commissioning, Grundfos managed the project.”





## SMART Digital Dosing Highlight

### SIMPLICITY

- Turn-and-push knob
- Intuitive menu
- Big LCD display with four color “traffic light” concept

### MODULARITY

- Turn down ratio up to 3000:1
- Mounting plate that serves as shelf
- Moveable control cube

### FLOW INTELLIGENCE

- FlowControl with fault diagnosis
- Pressure monitoring
- Flow measurement
- AutoFlowAdapt



# CHEMICAL FEED

## PRODUCT HIGHLIGHT

### [A] SMART Digital DDA, DDC, DDE

Easy plug-n-play design, advanced control options and built around stepper motors, the SMART Digital pumps move dosing technology to the future.

### [B] Suction Lances

A full line of feed accessories such as drum suction lances and injection quills.

### [C] DMH Hydraulic Pumps

For robust, demanding or high-pressure applications, these hydraulic pumps offer unique features to ensure long-life and precise feed.

### [D] Stepper Drives

The heart of our Digital Dosing pumps, allowing for up to 3000:1 turndown at +/- 1%.

### [E] Multi-Function Valves

An all-in-one solution to provide pressure regulation, pressure relief and easy priming.

### [F] Installation Kit

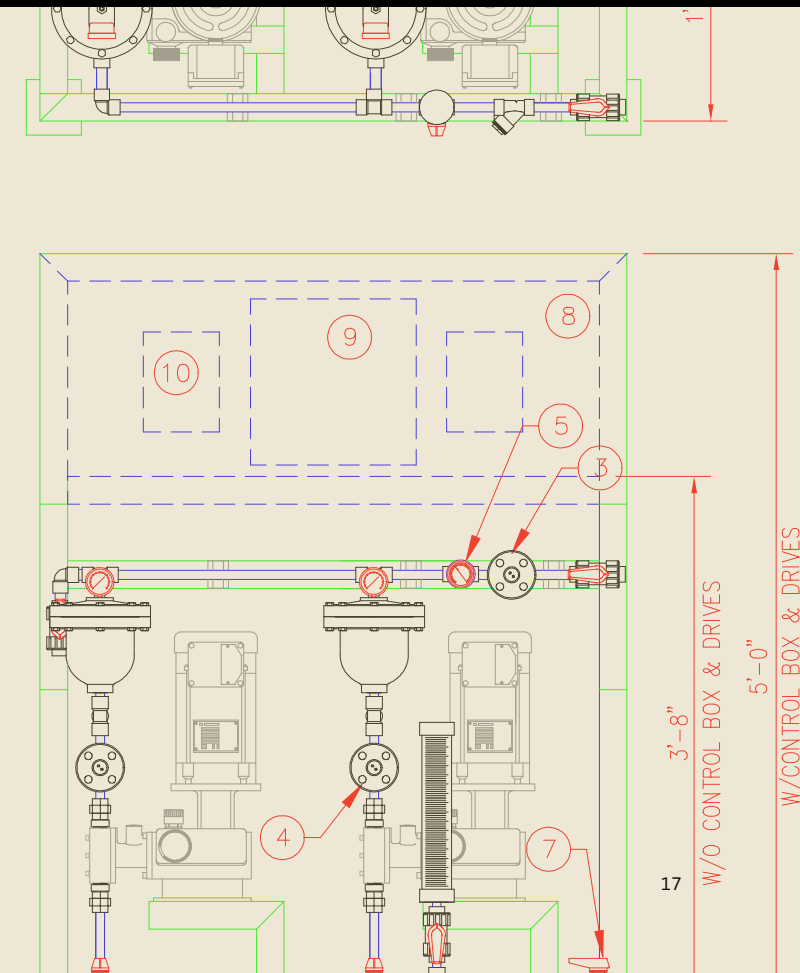
A full selection of chemical feed installation sets including suction and discharge accessories.

### [G] Chemical Feed Systems

Pre-engineered or engineered systems that combine the best in Grundfos pumps with required accessories in a straight-forward skidded design.



*“Combining our pump, engineering and supply chain expertise with our partners’ water treatment technology and application knowledge means end-users get the best solutions.”*  
*– Duncan Cooper, president of Grundfos North America.*





# PRESSURE BOOSTING

**B**ehind the scenes at Sporting Park in Kansas City, a Grundfos BoosterpaQ Hydro MPC System ensures that the stadium's plumbing is not a source of concern for fans or staff.

The system provides smooth operation, as well as energy and space savings, for all the facility's water fixtures.

"As a company committed to the Kansas City community, Grundfos was proud to provide equipment for the Sporting KC facility," said Dennis Wierzbicki, president of Grundfos USA.

The 342,000 square foot stadium seats more than 18,000 fans for soccer games and 25,000 for concerts.

“We were all very impressed with the performance of the system.”





*“As a company committed to the Kansas City community, Grundfos is proud to provide equipment for the Sporting KC facility.”*  
 – Dennis Wierzbicki, president of Grundfos USA.



## Pressure Boosting at Sporting Park, Kansas City

The highest flow demand occurs at intermission or halftime and requires a “worst case” capacity of 1,200 gallons per minute.

The Grundfos BoosterpaQ Hydro MPC, consisting of three vertical multi-stage CR pumps, is designed to handle this type of volume, all while maintaining constant pressure. If flow demand drops to zero, the system is designed to switch off automatically. When demand is again required, the system automatically switches on and adjusts its capacity to meet the flow and pressure requirements. This feature saves both energy and maintenance costs.

*“There are many suppliers to choose from for this type of application, but very few can provide a control system that is as smooth and energy-efficient as the Grundfos Hydro MPC system,”* said Brian James, Grundfos product manager.

In addition to its energy-saving capabilities, the Grundfos BoosterpaQ Hydro MPC is virtually vibration-free compared to alternatives that require on-site adjustments to minimize vibration. It even passed the “nickel test” – a nickel placed on the edge of the pump running at full speed neither moved nor fell.

*“We were all very impressed with the performance of the system,”* said Michelle Land, senior product manager for the mechanical engineering firm that installed Grundfos pumps in the facility.

*“The Grundfos pumps installed at Sporting Park have provided us not only with precise water pressure, but have also assisted us in becoming more efficient from an operations standpoint,”* said Jamie Guin, vice president of Corporate Partnerships for Sporting Kansas City.

## PRESSURE BOOSTING PRODUCT HIGHLIGHT

### [A] BoosterpaQ Hydro MPC

Pressure boosting systems that makes the most of Grundfos pumps, drives and controls for even the most difficult boosting jobs, with ease and accuracy.

### [B] CR/CRE Pumps

A versatile, modular and reliable standard for pressure boosting, including options for an integrated drive.

### [C] CM Pumps

For smaller, compact pressure boosting the CM offers the same advantages in Grundfos multi-stage pumps efficiency and technology.

### [D] DPI Pressure Sensor

Rugged and robust line of accurate pressure and differential pressure sensors.

### [E] VFI Flow Sensor

Industrial, vortex flow sensors for accurate measurements.

### [F] Grundfos GO

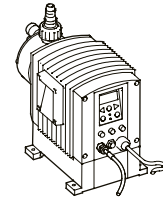
Real-time connection and control of pumps using a Smart phone.



# THE COMPLETE PUMP PORTFOLIO

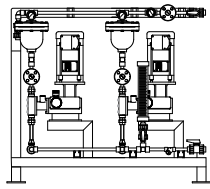
# FOR WATER TREATMENT

## Product: Dosing Pumps



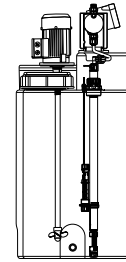
**Product types:** DDA, DDC, DDE, DME, DDI, DMH, DMX  
**Pump principle:** SMART Digital dosing mechanical and hydraulic diaphragm metering pumps  
**Performance range:** 0.0006 to 2 x 278 gph, up to 2900 psi  
**Liquid temperature:** Max. 122°F (50°C)  
**Max. viscosity:** 3000 cps

## Product: Dosing System



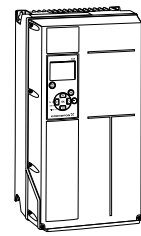
**Product types:** DSS  
**System principle:** Standard or custom built chemical feed systems  
 Single or multi-pump skids  
 Optional control panels  
 Floor, tank or wall mounted  
 Wide range of material options

## Product: Dosing Tank System



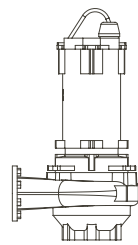
**Product types:** DTS  
**System principle:** Pre-engineered chemical feed tank packages  
**Tanks:** 15 to 264 US gallon, UV stabilized PE  
**Pump types:** DDA, DDC, DDE, DDI, DMX 221 (up to 50 l/hr)

## Product: CUE Drive



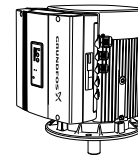
**Product types:** CUE  
**Drive principle:** Analog control using PWM control  
**HP:** 0.5 to 300HP (based on avg. Amps/HP)  
 Product range varies with voltage  
**Voltage:** 1x200-240V, 3x200-240V, 3x389-500V, and 3x525-600V  
**Enclosure:** NEMA 1 and NEMA 12  
**Ambient temperature:** 122°F (50°C)

## Product: SV, S



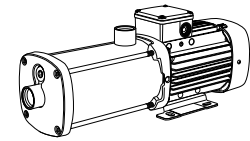
**Product types:** SV, SL, S2, S3  
**Pump principle:** Super Vortex impeller or channel impeller pumps  
**Flow, Q:** Max. 28,530 gpm (1,800 l/s)  
**Head, H:** Max. 361 ft (110 m)  
**Liquid temperature:** 32°F to 104°F (0°C to 40°C)  
**Discharge diameter:** DN 80 to DN 600

## Product: MLE Motors



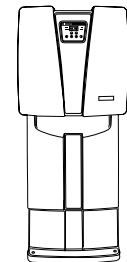
**Product types:** MLE with and without feet  
**Pump principle:** Motor with integral analog controller using PWM control  
**HP:** 0.5 to 1.5HP (1phase, 2-pole), 0.33 to 1HP (1phase, 4-pole, and 1 to 30HP (3phase, 2-pole)  
**Voltage:** 1x208-230V, 3x208-230V, 3x460-480V  
**Enclosure:** IP55  
**Ambient temperature:** 104°F (40°C)

## Product: CM Pump



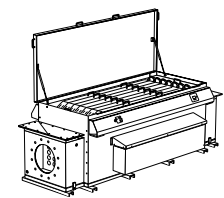
**Product types:** Compact Horizontal Multistage Pumps  
**Pump principle:** Vertical Pedestal Mounted Dry Pit Solids-Handling Pump  
**Flow, Q:** Max. 154gpm (35m3/h)  
**Head, H:** Max. 425 ft. (130m)  
**Liquid temperature:** Max. 248°F (120°C)  
**Discharge diameter:** Max. 12" (305 mm)

## Product: Chlorine Dioxide Generators



**Product types:** OCD 162 Oxiperm Pro  
**System principle:** Dilute acid-chlorite ClO2 generator for disinfection applications  
**Capacity:** 5 to 55 grams/hr (0.25 to 3 lb/day)  
 Continuous or batch feed  
 ClO2 analyzer and controller  
 Optional ClO2 measuring cell

## Product: UV Systems



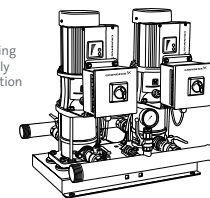
**Product types:** M3, M4, M5, C, D, E, series, In-Channel and Multistage Systems  
**Disinfection principle:** Non-contact UV Disinfection in wastewater treatment. Water flows through ASP™ tubes with the UV lamps on the outside surrounding the tubes  
**Flow, Q:** Min. 20 gpm, Max. 18,500  
**Pressure, P:** Max. 80 psi (5.5 bar)  
**Liquid temperature:** Max. 105°F (40°C)  
**Discharge diameter:** In-channel or flange options

## Product: Booster Modules



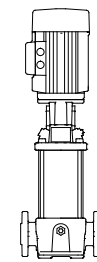
**Product types:** 4", 6", and 8" booster modules  
**Pump principle:** Industrial and water supply requiring increased system pressure. Typically used for reverse osmosis and filtration applications  
**Capacity, Q:** Max. 1,364 gpm (309 m3/hr)  
**Head, H:** Up to 1,580 ft (481 m)  
**Liquid temperature:** Max. 104°F (40°C)

## Product: Hydro Multi-E



**Product types:** Packaged Pump System, 2-4 CRE pumps  
**Pump principle:** Packaged Pump Systems – the Hydro Multi-E is UL-listed, NSF 61 Annex G approved, provides consistent, reliable and efficient pressure boosting to meet capacity requirements for your application  
**Flow, Q:** Max. 2,200 gpm (500 m3/h)  
**Head, H:** Max. 535 ft (163 m)  
**Liquid temperature:** Max. 176°F (80°C)  
**Discharge Diameter:** 2" NPT - 10" ANSI

## Product: Vertical Multistage Centrifugal Pumps



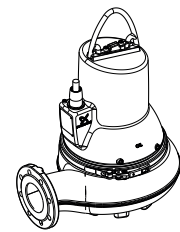
**Product types:** CR, CR1, CRN  
**Pump principle:** Horizontal one-pipe system suitable for liquid transfer in: Washing systems, cooling and air conditioning systems, water supply systems, water treatment systems, fire fighter systems, industrial plants, boiler feed systems  
**Flow, Q:** Min. 4.5 gpm, Max. 790 gpm  
**Head, H:** Max. 995 ft (303 m)  
**Liquid temperature:** -4°F (-20°C) to 250°F (121°C)  
**Discharge diameter:** 1.25" to 6" (31.8 mm to 152 mm)

## Product: SP



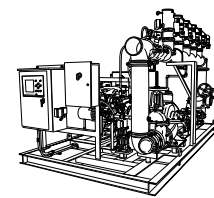
**Product types:** 4", 6", 8" and 10" submersible pump  
**Pump principle:** Submersible water pump  
**Flow, Q:** Max. 1,400 gpm (318 m3/hr)  
**Head, H:** Max. 2,100 ft (640 m)  
**Liquid temperature:** 140°F (60°C)  
**Discharge diameter:** 1" NPT to 6" NPT

## Product: SL1/SLV



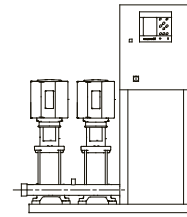
**Product types:** SL1, SLV  
**Pump principle:** Submersible wastewater pump  
**Flow, Q:** Max. 1,395 gpm (88 l/s)  
**Head, H:** Max. 144 ft (44 m)  
**Liquid temperature:** 32°F to 104°F (0°C to 40°C)  
**Discharge diameter:** 2.5" to 6" (DN65 to DN150)

## Product: PES Fire System



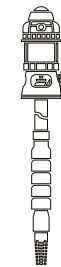
**Product types:** Inline, end suction horizontal split case and vertical turbine models  
**System principle:** Simple pump and driver arrangement on a skid to a fully-enclosed, completely-integrated pump and control center, with a diesel engine, and all the required controllers, fittings and ancillary equipment per NFPA20  
**Flow, Q:** Max. 5,000 gpm (1,136 m3/h)  
**Head, H:** Max. 1,176 ft. (359m)  
**Liquid temperature:** Max. 115°F (46°C)

## Product: Hydro MPC BoosterpaQ®



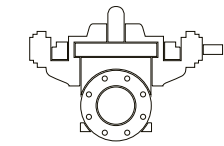
**Product types:** Advanced Packaged Pump System  
**Pump principle:** Pressure boosting in: Water supply systems, Irrigation systems, water treatment, fire protection systems, industrial plants, and HVAC systems  
**Flow, Q:** Max. 3,600 gpm (6 pump system)  
**Head, H:** Up to 500 ft. (152 m)  
**Liquid temperature:** Min./Max. 32°F - 176°F (0°C - 80°C)

## Product: Vertical Turbine Pumps



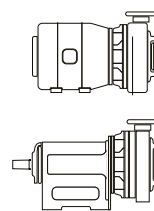
**Product types:** VTP  
**Pump principle:** Vertical lineshaft deep well pumps for water supply from drilled wells  
**Flow, Q:** Max. 150,000 gpm (34,091 m3/hr)  
**Head, H:** Max. 6,930 ft (2,112 m)  
**Liquid temperature:** Max. 450°F (232°C)  
**Discharge diameter:** 2 1/2" to 24" (6.36 cm to 61 cm)

## Product: Horizontal Split Case Pumps



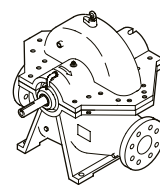
**Product types:** Type A, AE, TU, TUT, KP, KP/V  
**Pump principle:** Single stage and multi-stage pumps for high volum water supply  
**Flow, Q:** Max. 25,000 gpm (5,676 m3/hr)  
**Head, H:** Max. 675 ft (206 m)  
**Liquid temperature:** Max. 250°F (121°C)  
**Discharge diameter:** 2" to 24" (5.08 cm to 61 cm)

## Product: General Purpose End Suction Pumps



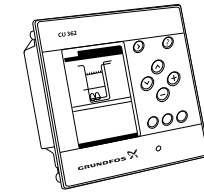
**Product types:** Type C, F, LC/LCV/LF/LFV/OL  
**Pump principle:** Single suction pumps designed for applications of medium duty service for water and liquid hydrocarbons in accordance with the Hydraulic Institute (HI)  
**Flow, Q:** Max. 2,300 gpm (560 m3/hr)  
**Head, H:** Max. 400 ft (122 m)  
**Liquid temperature:** Min/Max. 32°F - 250°F (0°C to 121°C)

## Product: HS



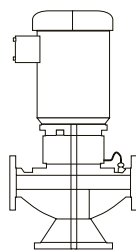
**Product types:** HS  
**Pump principle:** Single and two-stage horizontal split case pumps  
**Flow, Q:** Max. 175 gpm (40 m3/h)  
**Head, H:** Max. 160 ft (49 m)  
**Liquid temperature:** 32°F to 194°F (0°C to 90°C)  
**Operat. pressure:** Max. 125 bar

## Product: Dedicated Controls



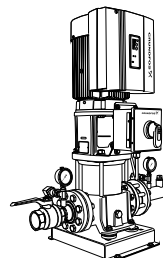
**Product types:** CU 362  
**Control principle:** Designed to optimize level control and energy usage in pumping stations  
**Pumps supported:** The Dedicated Controls is designed to control and monitor the Grundfos wastewater pumps listed below: SEG, SE, DP, EF, SL, S  
**Features and benefits:** Start/stop of wastewater pumps by means of float switches, analogue pressure sensors or ultrasonic sensors  
 Alternating operation of two pumps  
 Overflow measurement Alarms and warnings

## Product: Vertical In-Line Pumps



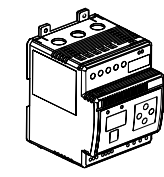
**Product types:** PV, VL/VLF  
**Pump principle:** Centrifugal in-line, pipe supported, close coupled pump and motor for supplying water  
**Flow, Q:** Max. 1,500 gpm (338 m3/hr)  
**Head, H:** Max. 400 ft (122 m)  
**Liquid temperature:** Max. 250°F (121°C)

## Product: CRE-Plus



**Product types:** Single Pump, Packaged System  
**Pump principle:** Packaged Pump Systems – the CRE-Plus is UL-listed, NSF 61 Annex G approved, provides consistent, reliable and efficient pressure boosting to meet capacity requirements for your application  
**Flow, Q:** Max. 500 gpm (114 m3/hr)  
**Head, H:** Max. 535 ft (163 m)  
**Liquid temperature:** Max. 248°F (120°C)  
**Discharge diameter:** 2" NPT - 4" ANSI

## Product: Motor Protection



**MP204:** Electronic motor protection. Dry-running, motor temperature, over- and under voltage, high current consumption  
**The MP 204 monitors the following parameters:**  
 • Insulation resistance before start-up  
 • Temperature (Tempcon, Pt sensor and PTC/thermal switch)  
 • Overload/underload  
 • Overvoltage/undervoltage  
 • Phase sequence  
 • Phase missing  
 • Power factor  
 • Power consumption  
 • Harmonic distortion  
 • Run and start capacitor (single-phase)  
 • Operating hours and number of starts



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